

Membrane Interferometric Carbon Dioxide Sensor, Phase I

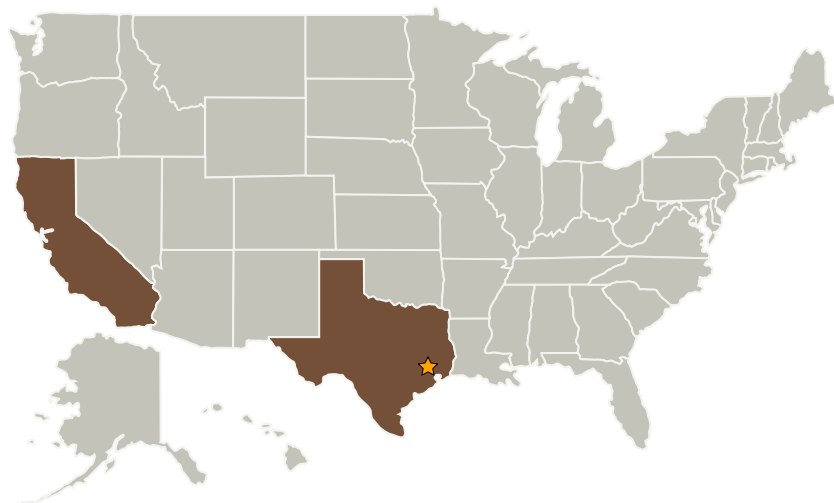
Completed Technology Project (2005 - 2005)



Project Introduction

To address the NASA need for extravehicular mobility units (EMUs) with enhanced mobility, dexterity, lifetime, maintainability, and reliability for the International Space Station and for future missions to the Moon and Mars, Physical Optics Corporation (POC) proposes to develop a new Membrane Interferometric Carbon Dioxide Sensor (MICADS). This sensor integrates a fiber optic interferometer, sensitive to displacements of a small fraction of a wavelength, and a semipermeable membrane to selectively detect, identify, and quantify gases at concentrations at the parts per million (ppm) level. The MICADS will measure carbon dioxide level by means of a selectively permeable membrane, which induces small displacements in a diaphragm that can be measured by the interferometer. POC's light, compact, and reliable MICADS sensor will monitor and control the air processing to remove carbon dioxide from EMUs. It will not consume oxygen, and will produce only minimal heat. In Phase I, POC will develop and demonstrate the performance of the proof-of-concept MICADS. In Phase II, a prototype will be developed and submitted to NASA for testing.

Primary U.S. Work Locations and Key Partners



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Organizational
Responsibility**Responsible Mission
Directorate:**

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

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Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Physical Optics Corporation	Supporting Organization	Industry	Torrance, California

Primary U.S. Work Locations

California	Texas
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Sergey Sandomirsky

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
 - └ TX06.1.1 Atmosphere Revitalization